

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A volume controller for controlling volume balance between a front speaker and a rear speaker located within a vehicle, comprising:

a fade volume computing unit for computing an amplifying factor k_1 of an input signal for providing an increased volume at the rear or front speaker which is equal to a decreased volume at the front or rear speaker when an input signal is attenuated by an attenuating factor K_1 , so that when a balancing point is moved from a prescribed position, a total volume within the vehicle is unchanged; and

a control unit for multiplying the signal supplied to the rear or front speaker by the amplifying factor k_1 when the input signal supplied to the front or rear speaker is attenuated by the attenuating factor K_1 and capable of dealing with a next fade input with attenuations changed by the amplifying factor k_1 and the attenuating factor K_1 recorded and newly set upon completion of the fade volume computing.

2. (currently amended): A volume controller for controlling volume balance between a front speaker and a rear speaker located within a vehicle, comprising:

a fade volume computing unit for computing an amplifying factor k_1 of an input signal for providing an increased volume at the rear or front speaker by the volume at a prescribed

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position within the vehicle which is equal to a decreased volume in the front or rear speaker when a signal supplied to the front or rear speaker is attenuated by an attenuating factor K1; and

a control unit for multiplying the signal supplied to the rear or front speaker by the amplifying factor k1 when a signal supplied to the front or rear speaker is attenuated by the attenuating factor K1 and capable of dealing with a next fade input with attenuations changed by the amplifying factor k1 and the attenuating factor K1 recorded and newly set upon completion of the fade volume computing;

wherein the prescribed position is located at a center of a front seat, at a center of a rear seat, or a center between the front seat and the rear seat.

3. (currently amended): A volume controller for controlling volume balance between a front speaker and a rear speaker located within a vehicle, comprising:

a fade volume computing unit for computing an amplifying factor k1 of an input signal for providing an increased volume at the rear or front speaker by the volume at a prescribed position within the vehicle which is equal to a decreased volume in the front or rear speaker when a signal supplied to the front or rear speaker is attenuated by an attenuating factor K1; and

a control unit for multiplying the signal supplied to the rear or front speaker by the amplifying factor k1 when a signal supplied to the front or rear speaker is attenuated by the attenuating factor K1 and capable of dealing with a next fade input with attenuations changed by the amplifying factor k1 and the attenuating factor K1 recorded and newly set upon completion of the fade volume computing;

wherein attenuations when acoustic waves from the front speaker and rear speaker are propagated to the prescribed position are previously recorded, and on the basis of the attenuations, the increased and decreased volumes at the front or rear speaker are computed.

4. (original): A volume controller according to claim 3, wherein the attenuations are computed on the basis of an input indicative of a relationship between the prescribed position and positions where the front and rear speaker are located.

5. (original): A volume controller according to claim 3, wherein the increased volumes of the front or rear speaker and of the rear or front speaker are computed on an adjustment value in a level adjusting means to be connected to the front speaker and the rear speaker.

6. (previously presented): A volume controller according to claim 1, wherein the prescribed position is located at a center of a front seat, at a center of a rear seat, or a center between the front seat and the rear seat.

7. (previously presented): A volume controller according to claim 1, wherein attenuations when acoustic waves from the front speaker and rear speaker are propagated to the prescribed position are previously recorded, and on the basis of the attenuations, the increased and decreased volumes at the front or rear speaker are computed.

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8. (previously presented): A volume controller according to claim 7, wherein the attenuations are computed on the basis of an input indicative of a relationship between the prescribed position and positions where the front and rear speaker are located.

9. (previously presented): A volume controller according to claim 7, wherein the increased volumes of the front or rear speaker and of the rear or front speaker are computed on an adjustment value in a level adjusting means to be connected to the front speaker and the rear speaker.

10. (new): A volume controller as claimed in claim 1, further comprising:
a digital central processing unit (CPU); and
a preset value recording unit operable to record attenuation values corresponding to the front and rear speakers, wherein said CPU controls a transfer of data between said digital control unit and said preset value recording unit.

11. (new): A volume controller for controlling volume balance between a front speaker and a rear speaker located within a vehicle, comprising:

a digital fade volume computing unit operable to compute an amplifying factor of an input signal for providing an increased volume at the rear or front speaker which is equal to a decreased volume at the front or rear speaker, respectively, when an input signal is attenuated by an attenuating factor, wherein a total volume within the vehicle is unchanged; and

a digital control unit operable to multiply the signal supplied to the rear or front speaker by the amplifying factor when the input signal supplied to the front or rear speaker is attenuated by the attenuating factor.

12. (new): A volume controller as claimed in claim 11, further comprising:

an interface device operable to receive digital data from said digital control unit and provide control data to one or more attenuators operable to attenuate the signal by the attenuating factor.

13. (new): A volume controller for controlling the volume to one or more speakers, the controller comprising:

one or more amplifiers corresponding respectively to each of the one or more speakers and operable to respectively amplify audio signals to each of the corresponding speakers;

one or more attenuators corresponding respectively to each of the one or more amplifiers and operable to attenuate the audio signals amplified by the amplifiers based on control signals;

a digital controller comprising a CPU and operable to generate the control signals.

14. (new): A volume controller as claimed in claim 13, wherein a total volume generated by the speakers is maintained constant.

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15. (new): A volume controller as claimed in claim 14, wherein said digital controller further comprises:

a preset recoding unit operable to digitally record present attenuator values corresponding respectively to the attenuators;

a fade volume computing unit operable to calculate an amplifying factor based on the preset attenuator values; and

a control unit operable to compute the control signals.

16. (new): A volume controller as claimed in claim 15, wherein said digital controller further comprises a loss recording unit operable to compute an attenuator value based on calculated distances from the speakers to a predetermined position in the proximity of the speakers.